

REMARKS

Claims 1-114 are pending in the above-captioned patent application after this amendment. Claims 1-70 have been rejected. Claims 36, 37, 69 and 70 have been objected to as being of improper dependent form for failing to further limit the subject matter of a previous claim.

The Applicants respectfully disagree with the rejection of claims 1-70. However, the Applicants have amended claims 1, 5, 36-38, 42, 69 and 70, and added new claims 71-114 for the purpose of expediting the patent application process in a manner consistent with the goals of the Patent Office pursuant to 65 Fed. Reg. 54603 (September 8, 2000), and/or to clarify what the Applicants regard as the present invention.

Support for the amendments to claims 1, 5, 36-38, 42, 69 and 70 can be found throughout the originally filed specification. In particular, support for the amendments to claims 1, 5, 36-38, 42, 69 and 70 can be found at page 10, line 31 through page 11, line 14, at page 67, line 23 through page 68, line 3, at page 72, lines 21-31, and in Figures 6C-6F, 7 and 8A..

Support for new claims 71-114 can be found throughout the originally filed specification. In particular, support for new claims 71-114 can be found at page 10, line 31 through page 11, line 14, in Figures 6C-6F, and in originally filed claims 1-70.

No new matter is believed to have been added by this amendment.

Reconsideration of the pending application is respectfully requested in view of the above-recited amendments and the arguments set forth below.

Claim Objections

Claims 36, 37, 69 and 70 are objected to under 37 CFR 1.75(c) as being of improper dependent form for failing to further limit the subject matter of a previous claim. In particular, the Examiner states that the "Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form." More specifically, the Examiner provides that "(c)laims 36 and 37 do not list any more structural elements that can be contained in the exposure apparatus

recited in claim 35, they only recite an intended use of said apparatus. Furthermore, claims 69 and 70 do not recite any additional method steps used to make the exposure apparatus recited in claim 68, they only recite the intended use of said exposure apparatus."

The Applicants have amended claims 36, 37, 69 and 70 to provide a process and method for manufacturing a device or wafer including the steps of providing a substrate and transferring or forming an image on the substrate utilizing an exposure apparatus having features of the present invention. Accordingly, the Applicants respectfully submit that the bases for objection to claims 36, 37, 69 and 70 under 37 CFR 1.75(c) have been overcome.

Rejections Under 35 U.S.C. §102(e)

Claims 1, 4, 10-13, 15-18, 20-26, 28-38, 41, 46-50, 52-59 and 61-70 are rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,486,941 issued to Hazelton et al. (hereinafter "Hazelton et al."). The Applicants have amended independent claims 1 and 38 with this amendment. The Applicants respectfully submit that claims 1-70 are patentable over Hazelton et al.

The Examiner contends that with regard to claims 1, 11, 12, 15, 16, 38, 47 and 48, "Hazelton et al teach a stage apparatus and exposure apparatus comprising a stage base 12; a stage mover 18 for moving a device table; a holder assembly 16 including a device holder 68 for holding a device such a (sic) wafer; and a holder mover 19 for moving the holder assembly, wherein a portion of the holder mover is disposed on the holder assembly 16."

With regard to claims 4 and 41, the Examiner further provides that "Hazelton et al describe in column 3 lines 39-52 that the stage mover rotates the device holder relative to the stage base 12." Regarding "(c)laims 10, 13, and 46, in column 11 lines 9-67 and column 12 lines 27, Hazelton et al describe that the holder assembly rotates about a holder axis of rotation 138 and that the holder assembly has a center of gravity 134, said center of gravity is offset from the holder axis of rotation."

Additionally, with regard to claims 17, 18, 23, 49, 50 and 56, the Examiner states that "figures 6 and 7A of Hazelton et al show a holder assembly engaging the motor 19."

Regarding "(c)claims 20 and 52, Hazelton et al describe stage 14 for supporting the device table, wherein motor 18 is secured to stage 14."

Still further, with regard to claims 21, 24, 29, 31, 53, 55 and 57, the Examiner contends that "Hazelton et al describe reaction element 160 for inhibiting disturbance forces from the movers from being transferred to the moving stages." Regarding "(c)claims 22 and 54, Hazelton et al describe the movers secured to a frame 66."

Yet further, with regard to claims 25, 26, 28, 30, 32, 33, 58, 59 and 61-66 the Examiner provides that "Hazelton et al describe that the holder mover includes components 108 and 110, wherein element 108 is connected to the holder assembly and secured to the device holder; and element 110 is secured to the device table, the stage holding the device table, the frame 66, and the reaction element 160, as shown in figure 1. Claims 34 and 67, in column 9 lines 1-9, Hazelton et al describe that one of the mover components includes one or more magnet arrays and the other one includes one or more conductor arrays."

Still yet further, with regard to claims 35 and 68, the Examiner states that "Hazelton et al describe that their stage assembly can be used in an exposure apparatus such as the one shown in figure 8." Regarding "(c)claims 36, 37, 69, and 70, Hazelton et al describe that the type of device being moved, manufactured, or inspected is a semiconductor wafer."

The Applicants respectfully disagree with some of the Examiner's evaluation of Hazelton et al.. In a first embodiment, Hazelton et al. is directed to a stage assembly 10 comprising a stage base 12, a first stage 14 including a first stage frame 40, a second stage 16 including a second stage frame 66 and a device holder 68 that retains a device 24, a first mover assembly 18, and a second mover assembly 19.

The first mover assembly 18 controls and moves the first stage 14 relative to the stage base 12 a relatively large displacement along the X axis, a limited displacement along the Y axis, and a limited displacement about the Z axis. More specifically, the first mover assembly 18 includes X movers 82, 84 that make relatively slight adjustments to position the first stage 14 about the Z axis. The forces generated by each X mover 82, 84 to move the first stage 14 along the X axis and about the Z axis vary depending on the Y distance that each X mover 82, 84 is from a combined center of gravity 134.

The second mover assembly 19 moves the second stage 16 with a relatively large displacement along the Y axis relative to the first stage 14. The second mover assembly 19 includes a second stage Y mover 106 with a first Y component 108 secured to the first stage frame 40 and a second Y component 110 secured to the second stage frame 66. (Hazelton et al. column 3, lines 39-48, column 5, lines 45-61, column 6, lines 26-52, column 8, lines 7-16, column 8, lines 41-65, column 11, lines 10-27, and in Figure 1).

In a second embodiment, Hazelton et al. is directed to a stage assembly that further comprises a reaction stage 160 that is positioned between the first stage 14 and the second stage 16. The reaction stage 160 includes a reaction stage frame 161 and the first Y component 108 of the second stage Y mover 106. This design allows for reaction forces from the second stage Y mover 106 to be transferred away from the first stage. (Hazelton et al. column 14, line 46 through column 15, line 14, and in Figure 5).

In these embodiments, if the first stage 14 is considered to be the device table, then Hazelton et al. does not teach the device holder 68 rotating relative to the device table. Alternatively, if the stage base 12 is considered to be the device table, then Hazelton et al. does not teach the stage mover assembly moving the device table. Further, Hazelton et al. does not disclose the motor secured to an apparatus frame, as opposed to a stage frame. Still further, Hazelton et al. does not disclose a damper that secures the motor or a component thereof to the stage or the device table to dampen vibration and inhibit disturbance forces from the motor from being transferred to the stage or device table.

In another embodiment, Hazelton et al. is directed to a stage assembly 10 further comprising a third stage 176, which includes the device holder 68, that is moved relative to the second stage 16 by a third mover assembly 180 with six degrees of freedom. (Hazelton et al. column 16, lines 24-34, and in Figures 7C and 7D).

However, Hazelton et al. does not disclose rotation of the device holder relative to the device table of at least approximately five degrees. Still further, Hazelton et al. does not disclose the device holder rotating relative to the device table about a holder axis of rotation that is offset from an assembly center of gravity of the holder assembly.

In contrast to Hazelton et al., amended claim 1 of the present application requires “(a) stage assembly that moves a device, the stage assembly comprising: a device table; a stage mover assembly connected to the device table, the stage mover

assembly moving the device table; a holder assembly including a device holder that retains the device and rotates relative to the device table; and a holder mover assembly that rotates the device holder at least approximately five degrees relative to the device table between a first position and a second position."

These features are not taught by Hazelton et al. Accordingly, the 35 U.S.C. §102(e) rejection of claim 1 in view of Hazelton et al. is overcome.

Further, a potential 35 U.S.C. §103 rejection of claim 1 is believed to be inappropriate because Hazelton et al. is disqualified as prior art for this type of rejection. More specifically, 35 U.S.C. §103(c), provides that "(c) Subject matter developed by another person, which qualifies as prior art only under one or more of subsections (e), (f), and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person." 35 U.S.C. §103(c). (Emphasis added).

Evidence to Establish Common Ownership

The claimed invention included in the present application and Hazelton et al. were, at the time the invention in the present application was made, owned by and/or subject to an assignment to Nikon Corporation. Thus, Hazelton et al., which qualifies as prior art under 35 U.S.C. §102(e), is disqualified as prior art in a rejection under 35 U.S.C. §103(a). (See MPEP 706.02(l)(2)).

Because sufficient evidence has been provided to establish "common ownership" of the present invention and Hazelton et al., a potential rejection of claim 1 under 35 U.S.C. §103(a) based on Hazelton et al. is believed to be inappropriate. Accordingly, claim 1 is considered to be patentable in view of Hazelton et al. Because claims 2-37 depend either directly or indirectly from amended claim 1, they are also believed to be patentable over the cited reference.

Further, in contrast to Hazelton et al, amended claim 38 of the present application requires "(a) method for making a stage assembly for moving a device, the method comprising the steps of: providing a device table that is supported movably; connecting a stage mover assembly to the device table; providing a holder assembly including a device holder that retains the device; and providing a holder mover assembly to rotate

the device holder at least approximately five degrees relative to the device table between a first position and a second position.”

These features are not taught by Hazelton et al. Accordingly, the 35 U.S.C. §102(e) rejection of claim 38 in view of Hazelton et al. is overcome. Further, a potential 35 U.S.C. §103 rejection of claim 38 is believed to be inappropriate because Hazelton et al. is disqualified as prior art for this type of rejection. Because claims 39-70 depend either directly or indirectly from amended claim 38, they are also believed to be patentable over the cited reference.

Rejections Under 35 U.S.C. §103(a)

Claims 2, 3, 9, 39 and 40

Claims 2, 3, 9, 39 and 40 are rejected under 35 U.S.C. §103(a) as being unpatentable over Hazelton et al. The Applicants respectfully traverse the rejection of claims 2, 3, 9, 39 and 40 and respectfully submit that claims 2, 3, 9, 39 and 40 are patentable over the cited reference. As provided above, a 35 U.S.C. §103 rejection of the claims of this application is believed to be inappropriate because Hazelton et al. is disqualified as prior art for this type of rejection.

Further, as argued above, amended claim 1 is believed to be patentable over Hazelton et al. Because claims 2, 3 and 9 depend directly from amended claim 1, they are also considered to be patentable over the cited reference.

Moreover, as argued above, amended claim 38 is believed to be patentable over Hazelton et al. Because claims 39 and 40 depend directly from amended claim 38, they are also considered to be patentable over the cited reference.

Claims 5-8, 14, 19, 27, 42-45, 51 and 60

Claims 5-8, 14, 19, 27, 42-45, 51 and 60 are rejected under 35 U.S.C. §103(a) as being unpatentable over Hazelton et al. and U.S. Patent No. 4,775,877 issued to Kosugi et al. (hereinafter “Kosugi et al.”). The Applicants respectfully traverse the rejection of claims 5-8, 14, 19, 27, 42-45, 51 and 60 and respectfully submit that claims 5-8, 14, 19, 27, 42-45, 51 and 60 are patentable over the cited references. As provided above, a 35 U.S.C. §103 rejection of the claims of this application is believed to be inappropriate because

Hazelton et al. is disqualified as prior art for this type of rejection.

As provided above, amended claim 1 is believed to be patentable. Because claims 5-8, 14, 19 and 27 depend either directly or indirectly from amended claim 1, they are also considered to be patentable over the cited reference.

Further, as provided above, amended claim 38 is believed to be patentable. Because claims 42-45, 51 and 60 depend either directly or indirectly from amended claim 38, they are also considered to be patentable over the cited reference.

New Claims

New claims 71-114 have also been added with this amendment. New claims 71-114 are of a slightly different scope than the previously pending claims. However, new claims 71-114 are believed to be patentable in view of the cited references.

New claim 71 requires a “stage assembly … comprising: a device table; a stage mover assembly connected to the device table, the stage mover assembly moving the device table; a holder assembly including a device holder that retains the device and rotates relative to the device table; and a holder mover assembly that includes a stop that engages the holder assembly and provides a stop axis of rotation for the rotation of the device holder relative to the device table between a first position and a second position.” These features are not taught by the cited references and Hazelton et al. is disqualified as prior art for a 35 U.S.C. §103(a) rejection. Accordingly, claim 71 is believed to be patentable. Because claims 72-75 depend either directly or indirectly from claim 71, they are also believed to be patentable over the cited reference.

New claim 76 requires a “A stage assembly … comprising: a device table; a stage mover assembly connected to the device table, the stage mover assembly moving the device table; and a holder assembly including a device holder that retains the device, the device holder rotating relative to the device table about a holder axis of rotation, and the holder assembly has an assembly center of gravity that is offset from the holder axis of rotation.” These features are not taught by the cited references and Hazelton et al. is disqualified as prior art for a 35 U.S.C. §103(a) rejection. Accordingly, claim 76 is believed to be patentable. Because claims 77-81 depend either directly or indirectly from claim 76, they are also believed to be patentable over the cited reference.

New claim 82 requires a “stage assembly … comprising: a device table; a stage mover assembly connected to the device table, the stage mover assembly moving the device table; a holder assembly including a device holder that retains the device and rotates relative to the device table, and a carrier that is positioned between the device holder and the device table; and a holder mover assembly that includes a motor that engages the carrier, the holder mover assembly rotating the device holder relative to the device table between a first position and a second position.” These features are not taught by the cited references and Hazelton et al. is disqualified as prior art for a 35 U.S.C. §103(a) rejection. Accordingly, claim 82 is believed to be patentable. Because claims 83-90 depend either directly or indirectly from claim 82, they are also believed to be patentable over the cited reference.

New claim 91 requires a “stage assembly … comprising: a device table; a stage that supports the device table; a stage mover assembly connected to the stage, the stage mover assembly moving the stage and the device table; a holder assembly including a device holder that retains the device and rotates relative to the device table; a holder mover assembly that includes a motor that rotates the device holder relative to the device table between a first position and a second position; and a damper that secures the motor to the stage, the damper inhibiting disturbance forces from the motor from being transferred to the stage.” These features are not taught by the cited references and Hazelton et al. is disqualified as prior art for a 35 U.S.C. §103(a) rejection. Accordingly, claim 91 is believed to be patentable. Because claims 92-95 depend either directly or indirectly from claim 91, they are also believed to be patentable over the cited reference.

New claim 96 requires an “exposure apparatus … comprising: an apparatus frame; and a stage assembly that moves the device, the stage assembly comprising: a device table; a stage mover assembly connected to the device table, the stage mover assembly moving the device table; a holder assembly including a device holder that retains the device and rotates relative to the device table; and a holder mover assembly that includes a motor that engages the holder assembly and rotates the device holder relative to the device table between a first position and a second position; wherein the motor is secured to the apparatus frame.” These features are not taught by the cited

references and Hazelton et al. is disqualified as prior art for a 35 U.S.C. §103(a) rejection. Accordingly, claim 96 is believed to be patentable. Because claims 97-99 depend either directly or indirectly from claim 96, they are also believed to be patentable over the cited reference.

New claim 100 requires a “stage assembly … comprising: a device table; a stage mover assembly connected to the device table, the stage mover assembly moving the device table; a holder assembly including a device holder that retains the device and rotates relative to the device table; a holder mover assembly that includes a motor that engages the holder assembly, the holder mover assembly rotating the device holder relative to the device table between a first position and a second position; and a damper that secures the motor to the device table, the damper inhibiting disturbance forces from the motor from being transferred to the device table.” These features are not taught by the cited references and Hazelton et al. is disqualified as prior art for a 35 U.S.C. §103(a) rejection. Accordingly, claim 100 is believed to be patentable. Because claims 101-105 depend either directly or indirectly from claim 100, they are also believed to be patentable over the cited reference.

New claim 106 requires a “stage assembly … comprising: a device table; a stage mover assembly connected to the device table, the stage mover assembly moving the device table; and a holder assembly including a device holder that retains the device and rotates relative to the device table, wherein the stage mover assembly moves the device table in a semi-circular path in order to rotate the device holder relative to the device table between a first position and a second position.” These features are not taught by the cited references and Hazelton et al. is disqualified as prior art for a 35 U.S.C. §103(a) rejection. Accordingly, claim 106 is believed to be patentable. Because claims 107-109 depend either directly or indirectly from claim 106, they are also believed to be patentable over the cited reference.

New claim 110 requires a “stage assembly … comprising: a device table; a stage mover assembly connected to the device table, the stage mover assembly moving the device table; and a holder assembly including a device holder that retains the device and rotates relative to the device table, wherein the stage mover assembly accelerates the device table in order to rotate the device holder relative to the device table between

a first position and a second position." These features are not taught by the cited references and Hazelton et al. is disqualified as prior art for a 35 U.S.C. §103(a) rejection. Accordingly, claim 110 is believed to be patentable. Because claims 111-114 depend either directly or indirectly from claim 110, they are also believed to be patentable over the cited reference.

Conclusion

In conclusion, the Applicants respectfully assert that claims 1-114 are patentable for the reasons set forth above, and that the application is now in a condition for allowance. Accordingly, an early notice of allowance is respectfully requested. The Examiner is requested to call the undersigned at 858-456-1951 for any reason that would advance the instant application to issue.

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Respectfully submitted,



STEVEN G. ROEDER
Attorney for Applicants
Registration No. 37,227

THE LAW OFFICE OF STEVEN G. ROEDER
5560 Chelsea Avenue
La Jolla, California 92037
Telephone: (858) 456-1951